



Freeform Search

Database:	US Pre-Grant Publication Full-Text Database
	US Patents Full-Text Database
	US OCR Full-Text Database
	EPO Abstracts Database
	JPO Abstracts Database
	Derwent World Patents Index
	IBM Technical Disclosure Bulletins

Term:	L61 same l53 not l3	
		

Display:	<input type="text" value="20"/>	Documents in Display Format:	<input type="text" value="-"/>	Starting with Number	<input type="text" value="1"/>
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Generate: ☐ Hit List ☒ Hit Count ☐ Side by Side ☐ Image

Search

Clear

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Search History

DATE: Monday, January 29, 2007 [Purge Queries](#) [Printable Copy](#) [Create Case](#)

Set Name Query

side by side

Hit Count Set Name

result set

DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

<u>L62</u>	L61 same l53 not l3	87	<u>L62</u>
<u>L61</u>	diabetes	103174	<u>L61</u>
<u>L60</u>	L59 not l3	1	<u>L60</u>
<u>L59</u>	L58 and l53	32	<u>L59</u>
<u>L58</u>	herb	27236	<u>L58</u>
<u>L57</u>	l6 and l53 not l3	3	<u>L57</u>
<u>L56</u>	l48 and l15	1	<u>L56</u>
<u>L55</u>	L54 and l48	0	<u>L55</u>
<u>L54</u>	L53 not l3	233	<u>L54</u>
<u>L53</u>	hemoglobin A1c or HbA1c	959	<u>L53</u>
<u>L52</u>	l49 and plant not l3	36	<u>L52</u>
<u>L51</u>	L49 and l48 not l3	0	<u>L51</u>
<u>L50</u>	L49 same l48 not l3	0	<u>L50</u>
<u>L49</u>	serine carboxypeptidase	446	<u>L49</u>
<u>L48</u>	rosaceae or vitaceae or umbelliferae	1894	<u>L48</u>
<u>L47</u>	l45 not l3	30	<u>L47</u>

<u>L46</u>	l45 and l6 not l3	2	<u>L46</u>
<u>L45</u>	L44 same l23	56	<u>L45</u>
<u>L44</u>	L43 same l4	224	<u>L44</u>
<u>L43</u>	remove near2 sugar	1435	<u>L43</u>
<u>L42</u>	L41 not l3	3	<u>L42</u>
<u>L41</u>	defruct\$	18	<u>L41</u>
<u>L40</u>	L39 not l3	10	<u>L40</u>
<u>L39</u>	lose near3 fructose	11	<u>L39</u>
<u>L38</u>	L11 not l3	15	<u>L38</u>
<u>L37</u>	l34 and l21 not l3	4	<u>L37</u>
<u>L36</u>	L35 not l3	0	<u>L36</u>
<u>L35</u>	L34 and l15	5	<u>L35</u>
<u>L34</u>	L33 same l4	7424	<u>L34</u>
<u>L33</u>	fructos\$	48838	<u>L33</u>
<u>L32</u>	L31 and l23	20	<u>L32</u>
<u>L31</u>	l4 and l21 not l3	21	<u>L31</u>
<u>L30</u>	l4 and l21 not l3	21	<u>L30</u>
<u>L29</u>	l4 and l21 not l3	21	<u>L29</u>
<u>L28</u>	L27 not l3	0	<u>L28</u>
<u>L27</u>	(fructosylated peptide)or (fructosylated protein)	5	<u>L27</u>
<u>L26</u>	L25 same l23	2	<u>L26</u>
<u>L25</u>	L24 not l3	43	<u>L25</u>
<u>L24</u>	l15 or l21	76	<u>L24</u>
<u>L23</u>	enzyme	373926	<u>L23</u>
<u>L22</u>	L21 and l6 not l3	1	<u>L22</u>
<u>L21</u>	remove near2 l5	59	<u>L21</u>
<u>L20</u>	l15 and l6 not l3	0	<u>L20</u>
<u>L19</u>	l18 and l5	1	<u>L19</u>
<u>L18</u>	L17 not l3	2	<u>L18</u>
<u>L17</u>	l14 and l6	2	<u>L17</u>
<u>L16</u>	L15 not l3	2	<u>L16</u>
<u>L15</u>	defructos\$	17	<u>L15</u>
<u>L14</u>	L13 not l3	15	<u>L14</u>
<u>L13</u>	L12 or l11	30	<u>L13</u>
<u>L12</u>	defructosylation	3	<u>L12</u>
<u>L11</u>	fructosylated	29	<u>L11</u>
<u>L10</u>	l7 same l6 not l3	19	<u>L10</u>
<u>L9</u>	L8 not l3	129	<u>L9</u>
<u>L8</u>	L7 and l6	470	<u>L8</u>
<u>L7</u>	l4 same l5	6259	<u>L7</u>
<u>L6</u>	plant near2 extracts	25521	<u>L6</u>

<u>L5</u>	fructose	45165	<u>L5</u>
<u>L4</u>	peptide or protein	596872	<u>L4</u>
<u>L3</u>	@pd>20021023	8437209	<u>L3</u>
<u>L2</u>	@pd?20021023	0	<u>L2</u>
<u>L1</u>	pd@20021023	0	<u>L1</u>

END OF SEARCH HISTORY

Glycosylation

From Wikipedia, the free encyclopedia
(Redirected from Glycosylated)

Glycosylation is the process or result of addition of saccharides to proteins and lipids. The process is one of four principal co-translational and post-translational modification steps in the synthesis of membrane and secreted proteins and the majority of proteins synthesized in the rough ER undergo glycosylation. It is an enzyme-directed site-specific process, as opposed to the non-enzymatic chemical reaction of glycation. Two types of glycosylation exist: **N-linked glycosylation** to the amide nitrogen of asparagine side chains and **O-linked glycosylation** to the hydroxy oxygen of serine and threonine side chains.

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Purpose

The polysaccharide chains attached to the target proteins serve various functions. For instance, some proteins do not fold correctly unless they are glycosylated first. Also, polysaccharides linked at the amide nitrogen of asparagine in the protein confer stability on some secreted glycoproteins. Experiments have shown that glycosylation in this case is not a strict requirement for proper folding, but the unglycosylated protein degrades quickly. Glycosylation may play a role in cell-cell adhesion (a mechanism employed by cells of the immune system), as well.

Mechanisms

There are various mechanisms for glycosylation, although all share several common features:

- Glycosylation is an enzymatic process
- The donor molecule is an activated nucleotide sugar
- The process is site-specific.

N-linked glycosylation

N-linked glycosylation is important for the folding of some of eukaryotic proteins. The *N*-linked glycosylation process occurs in eukaryotes and widely in archaea, but very rarely in bacteria.

For *N*-linked oligosaccharides, a 14-sugar precursor is first added to the asparagine in the polypeptide chain of the target protein. The structure of this precursor is common to most eukaryotes, and contains 3 glucose, 9 mannose, and 2 *N*-acetylglucosamine molecules. A complex set of reactions attaches this branched chain to a carrier molecule called dolichol, and then it is transferred to the appropriate point on the polypeptide chain as it is translocated into the ER lumen.

There are two major types of *N*-linked saccharides: high-mannose oligosaccharides, and complex oligosaccharides (Alberts et. al., Ch 13, pg 604). High-mannose is, in essence, just two *N*-acetylglucosamines with many mannose residues, often almost as many as are seen in the precursor oligosaccharides before it is attached to the protein. Complex oligosaccharides are so named because they can contain almost any number of the other types of saccharides, including more than the original two *N*-acetylglucosamines. Proteins can be glycosylated by both types of oligos on different portions of the protein. Whether an oligosaccharide is high-mannose or complex is thought to depend on its accessibility to saccharide-modifying proteins in the Golgi. If the saccharide is relatively inaccessible, it will most likely stay in its original high-mannose form. If it is accessible, then it is likely that many of the mannose residues will be cleaved off and the saccharide will be further modified by the addition of other types of group as discussed above.

The oligosaccharide chain is attached by oligosaccharyl transferase to asparagine occurring in the tripeptide sequence Asn-X-Ser or Asn-X-Thr, where X could be any amino acid except Pro. This sequence is known as a glycosylation *sequon*. After attachment, once the protein is correctly folded, the three glucose residues are removed from the chain and the protein is available for export from the ER. The glycoprotein thus formed is then transported to the Golgi where removal of further mannose residues may take place. However, glycosylation itself does not seem to be as necessary for correct transport targeting of the protein, as one might think. Studies involving drugs that block certain steps in glycosylation, or mutant cells deficient in a glycosylation enzyme, still produce otherwise-structurally-normal proteins that are correctly targeted, and this interference does not seem to interfere severely with the viability of the cells. Mature glycoproteins may contain a variety of oligomannose *N*-linked oligosaccharides containing between 5 and 9 mannose residues. Further removal of mannose residues leads to a 'core' structure containing 3 mannose, and 2 *N*-acetylglucosamine residues, which may then be elongated with a variety of different monosaccharides including galactose, *N*-acetylglucosamine, *N*-acetylgalactosamine, fucose and sialic acid.

O-linked glycosylation

***O*-N-acetylgalactosamine (*O*-GalNAc)**

O-linked glycosylation occurs at a later stage during protein processing, probably in the Golgi apparatus. This is the addition of *N*-acetyl-galactosamine to serine or threonine residues by the enzyme *UDP-N-acetyl-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase*, followed by other carbohydrates (such as galactose and sialic acid). This process is important for certain types of proteins such as proteoglycans, which involves the addition of glycosaminoglycan chains to an initially unglycosylated "proteoglycan core protein." These additions are usually serine *O*-linked glycoproteins, which seem to have one of two main functions. One function involves secretion to form components of

the extracellular matrix, adhering one cell to another by interactions between the large sugar complexes of proteoglycans. The other main function is to act as a component of mucosal secretions, and it is the high concentration of carbohydrates that tends to give mucus its "slimy" feel. Proteins that circulate in the blood are not normally *O*-glycosylated, with the exception of IgA1 and IgD (two types of antibody) and C1-inhibitor.

***O*-fucose**

O-fucose is added between the second and third conserved cysteines of EGF-like repeats in the Notch protein, and possibly other substrates by GDP-fucose protein *O*-fucosyltransferase 1, and to Thrombospondin repeats by GDP-fucose protein *O*-fucosyltransferase 2. In the case of EGF-like repeats, the *O*-fucose may be further elongated to a tetrasaccharide by sequential addition of N-acetylglucosamine (GlcNAc), galactose, and sialic acid, and for Thrombospondin repeats, may be elongated to a disaccharide by the addition of glucose. Both of these fucosyltransferases have been localized to the endoplasmic reticulum, which is unusual for glycosyltransferases, most of which function in the Golgi apparatus.

***O*-glucose**

O-glucose is added between the first and second conserved cysteines of EGF-like repeats in the Notch protein, and possibly other substrates by an unidentified *O*-glucosyltransferase.

***O*-N-acetylglucosamine (*O*-GlcNAc)**

O-GlcNAc is added to serines or threonines by *O*-GlcNAc transferase. *O*-GlcNAc appears to occur on serines and threonines that would otherwise be phosphorylated by serine/threonine kinases. Thus, if phosphorylation occurs, *O*-GlcNAc does not, and *vice versa*. This is an incredibly important finding because phosphorylation/dephosphorylation has become a scientific paradigm for the regulation of signaling within cells. A massive amount of cancer research is focused on phosphorylation. Ignoring the involvement of this form of glycosylation which clearly appears to act in concert with phosphorylation means that a lot of current research is missing at least half of the picture. *O*-GlcNAc addition and removal also appear to be key regulators of the pathways which are deregulated in diabetes mellitus. The gene encoding the *O*-GlcNAc removal enzyme has been linked to non-insulin dependent diabetes mellitus. It is the terminal step in a nutrient sensing hexosamine signaling pathway.

GPI anchor

A special form of glycosylation is the *GPI anchor*. Although this is a form of glycosylation, the result is a hydrophobic side chain, making GPI anchoring quite similar to prenylation.

C-mannosylation

A mannose sugar is added to tryptophan residues in Thrombospondin repeats. This is an unusual modification both because the sugar is linked to a carbon rather than a reactive atom like a nitrogen or oxygen and because the sugar is linked to a tryptophan residue rather than an asparagine or serine/threonine.

Refine Search

Search Results -

Term	Documents
((13 SAME 4) NOT 3).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	0
(L13 SAME L4 NOT L3).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	0

Database:

US Pre-Grant Publication Full-Text Database
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Search:

L15

Refine Search

Recall Text

Clear

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Search History

DATE: Monday, January 29, 2007 [Purge Queries](#) [Printable Copy](#) [Create Case](#)

Set Name Query

side by side

Hit Count Set Name

result set

DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

<u>L15</u>	l13 same l4 not l3	0	<u>L15</u>
<u>L14</u>	L13 and l12	66	<u>L14</u>
<u>L13</u>	deglycosylation	4423	<u>L13</u>
<u>L12</u>	L11 and l3	109	<u>L12</u>
<u>L11</u>	deglycosylat\$	6253	<u>L11</u>
<u>L10</u>	L9 same l3	1	<u>L10</u>
<u>L9</u>	plant or herb	873071	<u>L9</u>
<u>L8</u>	l3 and enzyme	102	<u>L8</u>
<u>L7</u>	L6 and l3	0	<u>L7</u>
<u>L6</u>	(hemoglobin A1c) or HbA1c	959	<u>L6</u>
<u>L5</u>	L4 same l3	1	<u>L5</u>

<u>L4</u>	plant near2 extracts	25521	<u>L4</u>
<u>L3</u>	l1 not L2	109	<u>L3</u>
<u>L2</u>	@pd>20021023	8437209	<u>L2</u>
<u>L1</u>	(deglycosylated peptide) or (deglycosylated protein)	232	<u>L1</u>

END OF SEARCH HISTORY